AMENDMENTS TO THE SPECIFICATION

Please amend paragraphs [0024], [0025], [0027], [0028], [0029], [0031], [0032], [0033], [0070], [0073], [0079], [0086], [0087], [0088], and [0089] of the specification as follows:

[0024] Figure 4B corresponds to a negative of a graphical representation of a gradient magnitude computation of the first image illustrated in Figure 4A.

[0025] Figure 4C corresponds to a negative of a graphical representation of a binary map of the gradient magnitude computation after threshold comparison ("binary gradient magnitude").

[0027] Figure 5B corresponds to a negative of a graphical representation of a gradient magnitude computation of the second image illustrated in Figure 5A.

[0028] Figure 5C corresponds to a negative of a graphical representation of a binary map of the gradient magnitude computation after threshold comparison ("binary gradient magnitude").

[0029] Figure 5D corresponds to a negative of a graphical representation of the results of a comparison between the binary gradient magnitude of the first image, a negative of which was described in connection with Figure 4C, and the binary gradient magnitude of the second image, a negative of which was described in connection with Figure 5C, where Figure 5D corresponds to relatively little motion.

[0031] Figure 6B corresponds to a negative of a graphical representation of a gradient magnitude computation of the third image illustrated in Figure 6A.

[0032] Figure 6C corresponds to a negative of a graphical representation of a binary map of the gradient magnitude computation after threshold comparison.

[0033] Figure 6D corresponds to a negative of a graphical representation of the results of a comparison between the binary gradient magnitude of the first image, a negative of which was described in connection with Figure 4C, and the binary gradient magnitude of the third image, a negative of which was described in connection with Figure 6C, where Figure 6D corresponds to relatively high motion.

[0070] In Equation 4, I_x and I_y are variables that correspond to the data for the gradient of a pixel of data in the x-direction and in the y-direction, respectively. The effect of low-pass filtering, gradient filtering, and magnitude computation, that is, gradient magnitude computation with low pass filtering, can be observed in Figures 4B, 5B, and 6B, which correspond to negatives of the gradient magnitude computation with low-pass filtering. For comparison, the data for the original images prior to the gradient magnitude processing, negatives of which are illustrated in Figures 4B, 5B, and 6B is illustrated in Figures 4A, 5A, and 6A, respectively. In the negatives illustrated in Figures 4B, 5B, and 6B, regions of the image with relatively high gradient magnitude are displayed as ~~brighter (more white)~~ darker (more black) than regions of the image with relatively low gradient magnitude. It should be noted that the data for the gradient magnitude computation ~~shown~~, negatives of which are illustrated in Figures 4B, 5B, and 6B is shown to facilitate the understanding of the process described herein and need not be shown or displayed to a user.

[0073] Examples of results of the binary mapping of the gradient magnitude are visually presented in Figures 4C, 5C, and 6C. Figures 4C, 5C, and 6C correspond to negatives of binary mappings of the gradient magnitude computations, negatives of which were illustrated in Figures 4B, 5B, and 6B, respectively. In the binary mappings ~~of~~, negatives of which are illustrated in Figures 4C, 5C, and 6C, the regions with relatively high gradient magnitude that are above the threshold G are presented as ~~"white"~~ "black" and the regions with relatively low gradient magnitude are presented in ~~"black."~~ "white." The binary mapping can be used after it has been computed, can be stored and used and/or reused at a later time, or both. It should be noted that the binary mappings ~~of~~, negatives of which are illustrated in Figures 4C, 5C, and 6C need not be shown or displayed to a user. The process advances from the state 306 to a state 308.

[0079] To illustrate the effects of the sloppy XOR comparison, a negative of a graphical representation of a sloppy XOR comparison between the binary map corresponding to Figure 4C and the binary map corresponding to Figure 5C is presented in Figure 5D. A negative of a graphical representation of a sloppy XOR comparison between the binary map corresponding to Figure 4C and the binary map corresponding to Figure 6C is presented in Figure 6D. The ~~dark~~ bright pixels in Figures 5D and 6D correspond to where the value *d* of the sloppy XOR is 0, and the ~~bright~~ dark pixels correspond to where the value *d* of the sloppy XOR comparison is 1. It will be understood that images generated from the sloppy XOR comparison do not need to be displayed to a user of the robot. The process advances from the state 310 to a state 312.

[0086] Figures 4B, 5B, and 6B correspond to negatives of visual images for gradient magnitude computations of the images in Figure 4A, 5A, and 6A, respectively. Computation of the gradient magnitude was described in greater detail earlier in connection with the state 304 of Figure 3. In the negatives illustrated in Figures 4B, 5B, and 6B, regions of the images that are relatively ~~bright~~ dark correspond to areas with relatively high gradient magnitude.

[0087] Figures 4C, 5C, and 6C correspond to negatives of visual images ~~after~~ of the binary maps of the gradient magnitude computations, negatives of which were illustrated in Figures 4B, 5B, and 6B, respectively. In the illustrated embodiment, the binary maps are generated from the gradient magnitude computations by comparing the values of the gradient magnitude computations to an adaptively calculated threshold as described in greater detail earlier in connection with the state 306 of Figure 3. The ~~bright~~ dark pixels of the negatives illustrated in Figures 4C, 5C, and 6C correspond to relatively high gradient magnitude, and the ~~dark~~ bright pixels correspond to relatively low gradient magnitude.

[0088] Figure 5D corresponds to a negative of a visual representation of a sloppy XOR comparison between the binary map of the image of Figure 4A (shown in Figure 4C) with the binary map of the image of Figure 5A (shown in Figure 5C). Examples of the sloppy XOR

comparison were described earlier in connection with the state 310 of Figure 3. Where the sloppy XOR comparison indicates a difference, the pixel in the negative is represented as ~~bright~~ dark. Where the sloppy XOR comparison does not indicate a difference, the pixel in the negative is represented as ~~dark~~ bright. In the example of Figure 5D, where the original images of Figures 4A and 5A are close, only one pixel in the negative is ~~bright~~ dark. The ~~bright~~ dark pixel in the negative can be observed at coordinates (103,70), where coordinate (1,1) is at the upper left corner. Accordingly, the count of the one difference is less than the threshold *T*, which, for example, can correspond to about 10, and the process accordingly determines that the robot is not in motion.

[0089] Figure 6D corresponds to a negative of a visual representation of a sloppy XOR comparison between the binary map of the image of Figure 4A (shown in Figure 4C) with the binary map of the image of Figure 6A (shown in Figure 6C). In the same manner described in connection with Figure 5D, where the sloppy XOR comparison indicates a difference, the pixel in the negative is represented as ~~bright~~ dark. Where the sloppy XOR comparison does not indicate a difference, the pixel in the negative is represented as ~~dark~~ bright. In the example of Figure 6D, where the robot has rotated between the original images of Figures 4A and 6A relatively many pixels are indicated as changed ~~(bright)~~ (dark). In Figure 6D, about 171 pixels in the negative are represented as ~~bright~~ dark. The count of the data points from the sloppy XOR comparison indicating a difference, which are then represented as ~~bright~~ dark points in the negative in Figure 6D, is compared to the threshold *T*. In the illustrated process, the threshold *T* corresponds to about 10, such that the comparison of the count of 171 pixels is greater than the threshold *T* of 10. Since the count is relatively high, the process detects that the motional state of the robot is "in motion."

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figures 4B, 4C, 5B, 5C, 5D, 6B, 6C, and 6D. These sheets, which include Figures 1, 2A, 2B, 2C, 3, 4A, 4B, 4C, 5A, 5B, 5C, 5D, 6A, 6B, 6C, and 6D, replace the original sheets including Figures 1, 2A, 2B, 2C, 3, 4A, 4B, 4C, 5A, 5B, 5C, 5D, 6A, 6B, 6C, and 6D. In Figures 4B, 4C, 5B, 5C, 5D, 6B, 6C, and 6D, the images have been changed to negatives of the originally-filed images.

Attachment: Replacement Sheets